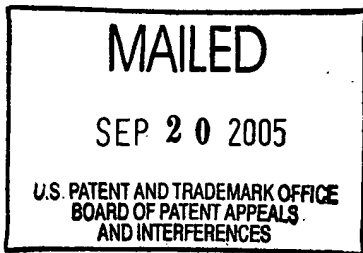


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**



Ex parte MICHAEL ANTHONY MARRA III
and BRUCE LANIER WALCOTT

Appeal No. 2005-1607
Application No. 09/226,971

ON BRIEF

Before KRASS, JERRY SMITH, and RUGGIERO, Administrative Patent Judges.
RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-3, 5 and 8.
Claims 4, 6, and 7 have been allowed.

The claimed invention relates to a method of regulating a target system in which a reference pulse train with a frequency dependent upon a reference signal is generated.
The target system to be regulated has an output in the form of a plurality of digital signals

defining a pulse train having a frequency. Upon comparison of the reference pulse train with the frequency of the feedback pulse train, a control signal, dependent upon the frequency comparison, is generated and input to the target system.

Claim 1 is illustrative of the invention and reads as follows:

1. A method of regulating a target system, comprising the steps of:

providing a reference signal;

generating a plurality of digital signals defining a reference pulse train with a frequency dependent upon said reference signal;

providing a target system to be regulated, said target system having an output in the form of a plurality of digital signals defining a feedback pulse train having a frequency;

comparing said frequency of said reference pulse train with said frequency of said feedback pulse train;

generating a control signal dependent upon said comparison; and

providing said control signal as an input to said target system.

The Examiner relies on the following prior art:

| | | |
|------------|-----------|----------------------|
| Long | 4,494,509 | Jan. 22 1985 |
| Hsieh | 5,212,434 | May 18, 1993 |
| O'Sullivan | 6,043,695 | Mar. 28, 2000 |
| | | (filed May 28, 1998) |

Jung-Chien Li and Guan-Chyun Hsieh (Hsieh article), "A Phase/Frequency-Locked Controller for Stepping Servo Control Systems," IEEE Transactions on Industrial Electronics, Vol. 39, No. 2, pp. 112-19 (April 1992).¹

¹ This document has been cited by the Examiner as evidence in support of the rejection.

Claims 1 and 8 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by the Hsieh patent. Claims 2, 3, and 5 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over the Hsieh patent in view of Long or O'Sullivan.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs² and Answer for the respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner and the evidence of anticipation and obviousness relied upon by the Examiner as support for the prior art rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellants' arguments set forth in the Briefs along with the Examiner's rationale in support of the rejections and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the Hsieh patent does not fully meet the invention as set forth in claims 1 and 8. With respect to the Examiner's obviousness rejection, we are further of the opinion that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as recited in claims 2, 3, and 5. Accordingly, we reverse.

² The Appeal Brief was filed January 31, 2002. In response to the Examiner's Answer dated April 8, 2002, a Reply Brief was filed June 17, 2002. After a Remand from the Board, the Examiner submitted a Supplemental Examiner's Answer dated September 22, 2004, to which Appellants responded with a Supplemental Reply Brief dated November 29, 2004.

We also use our authority under 37 CFR § 41.50(b) to enter a new ground of rejection of independent claim 1. The basis for these conclusions will be set forth in detail below.

We consider first the rejection of claims 1 and 8 under 35 U.S.C. § 102(b) as being anticipated by the Hsieh patent. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of indecency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

With respect to appealed independent claim 1, the Examiner attempts to read the various limitations on the disclosure of the Hsieh patent. In particular, the Examiner points to the Figure 1 illustration and the accompanying description beginning at column 3, line 27 of the Hsieh patent.

Appellants' arguments in response assert a failure of the Hsieh patent to disclose every limitation in independent claims 1 as is required to support a rejection based on anticipation. Appellants' assertions in the Briefs focus on the contention that, in contrast to the claimed invention in which a frequency comparison is performed to develop a control signal, the Hsieh patent discloses a phase comparison between a reference signal

and a feedback signal from a speed detector to produce a speed control signal for a target system.

After reviewing the disclosure of the Hsieh patent in light of the arguments of record, we are in general agreement with Appellants' position as expressed in the Briefs. We agree with Appellants that the only disclosed operation of comparator element 10 in the Hsieh patent is a phase comparison, not a frequency comparison as claimed.

Although the Examiner (Answer, page 4) asserts the inherency of performing a frequency comparison to ensure that the feedback and reference pulse trains are equal in frequency before a phase comparison can be performed, we find the record before us to be totally devoid of any support for such a conclusion. The Examiner must not only make requisite findings, based on the evidence of record, but must also explain the reasoning by which the findings are deemed to support the asserted conclusion. See In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002). In the present factual situation before us, we find compelling evidence which directly contradicts the Examiner's assertion as provided by Appellants' citation of U.S. Patent No. 5,608,354 to Hori at page 4 of the Reply Brief.

We recognize that the Examiner has submitted a Supplemental Examiner's Answer to make of record the IEEE article co-authored by Hsieh, the inventor of the Hsieh patent, which article is incorporated by reference in the Hsieh patent. It is our view, however, that the Hsieh article does not overcome the deficiencies in the disclosure of the Hsieh patent.

While the Hsieh article specifically indicates that the comparator element 10 disclosed in the Hsieh patent is the MC4044 frequency-phase comparator, the only comparison operation described in the Hsieh article, as with the Hsieh patent, is a phase comparison, and not a frequency comparison as claimed. In other words, to whatever extent the MC4044 comparator may be used as a frequency comparator, there is insufficient description of any frequency comparison in either the Hsieh patent or the Hsieh article to support a rejection based on anticipation.

In view of the above discussion, since all of the claim limitations are not present in the disclosure of the Hsieh patent, we do not sustain the Examiner's 35 U.S.C. § 102(b) rejection of independent claim 1, nor of claim 8 dependent thereon.

Turning to a consideration of the Examiner's 35 U.S.C. § 103(a) rejection of dependent claims 2, 3, and 5 based on the combination of the Hsieh patent and either Long or O'Sullivan, we do not sustain this rejection as well. The Long and O'Sullivan references have been added to the Hsieh patent by the Examiner to address the leading edge alignment feature of claim 2 and its dependent claims 3 and 5. We find nothing, however, in the disclosures of either Long or O'Sullivan which would overcome the innate deficiencies of the Hsieh patent discussed supra.

In summary, we have not sustained either of the Examiner's rejections of the claims on appeal. Therefore, the decision of the Examiner rejecting claims 1-3, 5, and 8 is reversed.

Rejection under 37 CFR § 41.50(b)

We make the following new ground of rejection using our authority under 37 CFR § 41.50(b).

Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by the Motorola MC4344/MC4044 brochure (hereinafter Motorola).³ Beginning with the second full paragraph on page 6-23 of Motorola, the operation of the MC4344/MC4044 phase-frequency detector as a frequency comparator is disclosed. As described and illustrated in rows (i)-(l) of the timing diagram of Figure 2, a reference pulse train R is compared with a feedback pulse train V from a target system, resulting in a frequency error signal U1. As indicated, "... the duty cycle of the U1 waveform varies at a rate proportional to the difference frequency of the two inputs, R and V. It is this characteristic that permits the MC4344/4044 to be used as a frequency discriminator." (Motorola, right column bridging paragraph at page 6-23). Further, that the generated frequency error signal is intended to be a control signal applied to a target system is readily evident from the disclosure of Motorola. For example, the textual paragraph at page 6-20 of Motorola indicates that the described "phase-frequency detector" is useful in a broad range of phase-locked loop applications.

³ The Motorola MC4344/MC4044 brochure describes the operation of a phase-frequency detector which, as indicated in the Hsieh article discussed supra, is utilized in the circuitry of the Hsieh patent cited and applied by the Examiner. A copy of this brochure is enclosed with this decision.

We note that, although the Motorola reference has been applied only against independent claim 1, this is not to be taken as an indication of the patentability of any of the other claims on appeal. In any resumption of the prosecution of this application before the Examiner, the Examiner should consider the applicability of Motorola, as well as the other prior art of record and any other discovered prior art, to all of the pending claims.

In summary, we have reversed the Examiner's 35 U.S.C. § 102(b) rejection of claims 1 and 8, as well as the 35 U.S.C. § 103(a) rejection of claims 2, 3, and 5. We have also entered a new ground of rejection against claim 1 under 37 CFR § 41.50(b).

As indicated supra, this decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 CFR § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 CFR § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). See 37 CFR § 1.136(a)(1)(iv).



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JERRY SMITH

Joseph F. Ruggi

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